

RESPONSE TO ELECTION OF SPECIES REQUIREMENT  
U.S. Appln. No. 10/049,670

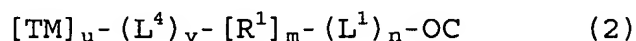
AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

Claims 1-54. (Cancelled).

Claim 55. (Previously Presented) A targeted bipolar lipid represented by formula (2):



wherein:

TM is a targeting molecule;

$R^1$  is a hydrocarbon chain optionally substituted by one or more hydrophilic hydrocarbons each containing at least one atom or group capable of being solvated by water, provided that at least one hydrocarbon chain is substituted by at least one hydrophilic hydrocarbon and each hydrophilic hydrocarbon is attached to the hydrocarbon chain to achieve at least a ten atom spacing along the chain between the hydrophilic hydrocarbon and the group  $-(L^1)_n - OC$ ;

m is an integer of from 1 to 6;

$L^1$  is a linker atom or group;

n is zero or the integer 1;

OC is an oligocation;

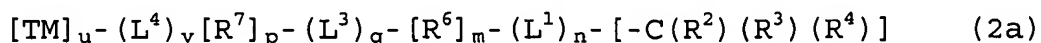
u is an integer 1 or 2;

$L^4$  is a linker atom or group; and

v is zero or the integer 1.

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Claim 56. (Previously Presented) The lipid according to Claim 55, wherein said lipid is represented by formula (2a):



wherein:

TM, u, L<sup>4</sup>, v, L<sup>1</sup>, m and n are as defined for formula (2);

R<sup>7</sup> is a hydrophilic hydrocarbon containing at least two atoms or groups capable of being solvated by water;

p is an integer of from 1 to 6;

L<sup>3</sup> is a linker atom or group;

q is zero or an integer of from 1 to 6;

R<sup>6</sup> is a hydrocarbon chain;

R<sup>2</sup> is a hydrogen atom or an optionally substituted aliphatic, cycloaliphatic, heteroaliphatic, heterocycloaliphatic, aromatic or heteroaromatic group optionally containing one or more cationic centers; and

R<sup>3</sup> and R<sup>4</sup>, which may be the same or different, is each an optionally substituted aliphatic, cycloaliphatic, heteroaliphatic, heterocycloaliphatic, aromatic or heteroaromatic group containing one or more cationic centers or R<sup>3</sup> and R<sup>4</sup> together with the carbon atom to which they are attached form a cycloaliphatic, heterocycloaliphatic, aromatic or heteroaromatic group containing two or more cationic centers.

Claim 57. (Currently Amended) The lipid according to ~~Claim 55 or~~ Claim 56, wherein TM is an antibody or an antigen binding fragment or derivative thereof.

Claim 58. (Currently Amended) The lipid according to Claim ~~55~~56, wherein u is the integer 1.

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Claim 59. (Currently Amended) The lipid according to Claim 5556, wherein:

v is the integer 1; and

$L^4$  is  $-(Alk^1)_r(X^1)_s(Alk^2)_t-$ ,

wherein  $X^1$  is an -O- atom; a -S- atom; -C(O)-; -C(O)O-; -C(S)-; -S(O); -S(O)<sub>2</sub>-; -N(R<sup>5</sup>)-; -CON(R<sup>5</sup>)-; -OC(O)N(R<sup>5</sup>)-; -CSN(R<sup>5</sup>)-; -N(R<sup>5</sup>)CO-; N(R<sup>5</sup>)C(O)O-; -N(R<sup>5</sup>)CS-; -S(O)N(R<sup>5</sup>)-; -S(O)<sub>2</sub>N(R<sup>5</sup>)-; -N(R<sup>5</sup>)S(O)-; -N(R<sup>5</sup>)S(O)<sub>2</sub>-; -N(R<sup>5</sup>)CON(R<sup>5</sup>)-; or -N(R<sup>5</sup>)SO<sub>2</sub>N(R<sup>5</sup>)-,

wherein R<sup>5</sup> is a hydrogen atom, a straight or branched alkyl group or an -Alk<sup>1</sup>X<sup>1</sup>- chain;

wherein in any of the groups containing two R<sup>5</sup> substituents each R<sup>5</sup> may be the same or different;

wherein Alk<sup>1</sup> and Alk<sup>2</sup>, which may be the same or different, is each an optionally substituted straight or branched C<sub>1-10</sub>alkylene, C<sub>2-10</sub>alkenylene or C<sub>2-10</sub>alkynylene chain optionally interrupted or terminated by at least one carbocyclic or heterocarbocyclic groups and/or heteroatoms or heteroatom containing groups X<sup>1</sup>; and

r, s, and t, which may be the same or different, is each zero or the integer 1, provided that when one of r, s or t is zero, at least one of the remainder is the integer 1.

Claim 60. (Previously Presented) The lipid according to Claim 59, wherein  $L^4$  is an -NHCO(Alk<sup>2</sup>)<sub>t</sub>- group.

Claim 61. (Previously Presented) The lipid according to Claim 56, wherein R<sup>2</sup> is a hydrogen atom; and R<sup>3</sup> and R<sup>4</sup> are each Sp<sup>1</sup>[WSp<sup>2</sup>]<sub>b</sub>WSp<sup>3</sup> or -Sp<sup>1</sup>[WSp<sup>2</sup>]<sub>b</sub>WH, wherein Sp<sup>1</sup>, Sp<sup>2</sup> and Sp<sup>3</sup>, which may

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be the same or different, is each a spacer group, W is a cationic center and b is zero or an integer from 1 to 6.

Claim 62. (Previously Presented) The lipid according to Claim 61, wherein  $Sp^1$ ,  $Sp^2$  and  $Sp^3$  is each an optionally substituted aliphatic, cycloaliphatic, heteroaliphatic, heterocycloaliphatic, aromatic or heteroaromatic group.

Claim 63. (Previously Presented) The lipid according to Claim 62, wherein  $Sp^1$ ,  $Sp^2$  and  $Sp^3$  is each an optionally substituted  $C_{1-6}$ alkylene chain.

Claim 64. (Previously Presented) The lipid according to Claim 61, wherein W is a -NH- group.

Claim 65. (Previously Presented) The lipid according to Claim 61, wherein b is an integer of from 1 to 3.

Claim 66. (Previously Presented) The lipid according to Claim 56, wherein  $-C(R^2)(R^3)(R^4)$  is  $-CH[Sp^1NHSp^2NH_2]_2$ ,  $-CH[Sp^1NHSp^2NHSp^2NH_2]_2$  or  $-CH[Sp^1NHSp^2NHSp^2NHCH_3]_2$ , wherein  $Sp^1$  is  $-CH_2-$  and each  $Sp^2$  is  $-(CH_2)_3-$  or  $-(CH_2)_4-$ .

Claim 67. (Currently Amended) The lipid according to Claim ~~55~~56, wherein n in  $-(L^1)_n-$  is the integer 1.

Claim 68. (Previously Presented) The lipid according to Claim 67, wherein  $L^1$  is  $-X^1Alk^2-$  or  $-[X^1]_2Alk^1X^1Alk^2-$ ,

wherein  $X^1$  is an -O- atom; a -S- atom; -C(O)-; -C(O)O-; -C(S)-; -S(O); -S(O)<sub>2</sub>-; -N(R<sup>5</sup>)-; -CON(R<sup>5</sup>)-; -OC(O)N(R<sup>5</sup>)-; -CSN(R<sup>5</sup>)-; -N(R<sup>5</sup>)CO-; N(R<sup>5</sup>)C(O)O-; -N(R<sup>5</sup>)CS-; -S(O)N(R<sup>5</sup>)-; -S(O)<sub>2</sub>N(R<sup>5</sup>)-; -N(R<sup>5</sup>)S(O)-; -N(R<sup>5</sup>)S(O)<sub>2</sub>-; -N(R<sup>5</sup>)CON(R<sup>5</sup>)-; or -N(R<sup>5</sup>)SO<sub>2</sub>N(R<sup>5</sup>)-;

wherein R<sup>5</sup> is a hydrogen atom, a straight or branched alkyl group or an  $-Alk^1X^1-$  chain,

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wherein in any of the groups containing two R<sup>5</sup> substituents each R<sup>5</sup> may be the same or different;

wherein Alk<sup>1</sup> and Alk<sup>2</sup>, which may be the same or different, is each an optionally substituted straight or branched C<sub>1-6</sub>alkylene, C<sub>2-6</sub>alkenylene or C<sub>2-6</sub>alkynylene chain optionally interrupted or terminated by at least one carbocyclic or heterocarbocyclic groups and/or heteroatoms or heteroatom containing groups X<sup>1</sup>.

Claim 69. (Previously Presented) The lipid according to Claim 68, wherein X<sup>1</sup> is a -CONH- group, Alk<sup>1</sup> is a -CH<sub>2</sub>-CH<sub>2</sub> chain and Alk<sup>2</sup> is a -(CH<sub>2</sub>)<sub>4</sub>- chain, -(CH<sub>2</sub>)<sub>5</sub>- chain or -(CH<sub>2</sub>)<sub>6</sub>- chain.

Claim 70. (Currently Amended) The lipid according to Claim 5556, wherein m is an integer 1 or 2.

Claim 71. (Previously Presented) The lipid according to Claim 56, wherein R<sup>6</sup> is an optionally substituted C<sub>10-60</sub>aliphatic chain.

Claim 72. (Previously Presented) The lipid according to Claim 71, wherein R<sup>6</sup> is a linear, optionally substituted C<sub>16-38</sub>alkylene chain.

Claim 73. (Previously Presented) The lipid according to Claim 56, wherein q is the integer 1 and p is the integer 1 or 2.

Claim 74. (Previously Presented) The lipid according to Claim 56, wherein L<sup>3</sup> is -X<sup>1</sup>-, -X<sup>1</sup>Alk<sup>1</sup>X<sup>1</sup>- or [X<sup>1</sup>Alk<sup>1</sup>]<sub>1</sub>X<sup>1</sup>Alk<sup>2</sup>X<sup>1</sup>,

wherein X<sup>1</sup> is an -O- atom; a -S- atom; -C(0)-; -C(0)O-; -C(S)-; -S(0); -S(0)<sub>2</sub>-; -N(R<sup>5</sup>)-; -CON(R<sup>5</sup>)-; -OC(0)N(R<sup>5</sup>)-; -CSN(R<sup>5</sup>)-; -N(R<sup>5</sup>)CO-; N(R<sup>5</sup>)C(0)O-; -N(R<sup>5</sup>)CS-; -S(0)N(R<sup>5</sup>)-;

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$-S(O)_2N(R^5)-$ ;  $-N(R^5)S(O)-$ ;  $-N(R^5)S(O)_2-$ ;  $-N(R^5)CON(R^5)-$ ; or  
 $-N(R^5)SO_2N(R^5)-$  group;

wherein  $R^5$  is a hydrogen atom, a straight or branched alkyl group or an  $-Alk^1X^1-$  chain;

wherein in any of the groups containing two  $R^5$  substituents each  $R^5$  may be the same or different;

wherein  $Alk^1$  and  $Alk^2$ , which may be the same or different, is each an optionally substituted straight or branched  $C_{1-6}$ alkylene,  $C_{2-6}$ alkenylene or  $C_{2-6}$ alkynylene chain optionally interrupted or terminated by at least one carbocyclic or heterocarbocyclic groups and/or heteroatoms or heteroatom containing groups  $X^1$ .

Claim 75. (Previously Presented) The lipid according to Claim 74, wherein  $L^3$  is a  $-NHCO-$ ,  $-CONH-$ ,  $-CONH(CH_2)_2NHCO-$ , or  $-[CONH(CH_2)_2-]_2NCO(CH_2)_2CONH$  group.

Claim 76. (Previously Presented) The lipid according to Claim 56, wherein  $R^7$  is a synthetic or naturally occurring polyol or a poly(alkylene oxide) or a derivative thereof.

Claim 77. (Previously Presented) The lipid according to Claim 76, wherein  $R^7$  is a poly(alkylene oxide) or a derivative thereof.

Claim 78. (Previously Presented) The lipid according to Claim 77, wherein  $R^7$  is a poly(ethylene oxide).

Claim 79. (Previously Presented) The lipid according to Claim 59, wherein  $R^5$  is a methyl or ethyl group.

Claim 80. (Previously Presented) The lipid according to Claim 68, wherein  $R^5$  is a methyl or ethyl group.

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Claim 81. (Previously Presented) The lipid according to Claim 74, wherein R<sup>5</sup> is a methyl or ethyl group.